

# CITY OF ARLINGTON STORM DRAINAGE NOTES:

- All storm drainage improvements shall be constructed in accordance with these approved plans and City Standards and specifications. Any deviation from these plans will require prior approval from the owner, the City Engineer, and other appropriate public agencies.
- 2. All pipe materials shall meet the requirements of the City Standards and Specifications. Acceptable storm drainage pipe materials include concrete, pvc, hdpe, and ductile iron. Corrugated metal pipes (galvanized aluminum or steel) are not accepted by the City. All pipe joints must have gaskets and shall be water tight unless otherwise directed by the City.
- 3. Pipe bedding material shall be 5/8-inch minus crushed gravel for all pipe types, except ductile iron. Bedding material for ductile iron pipe shall meet the requirements of the City's Standards and Specifications (Chapter 4).
- 4. All trench backfill in areas of pavement or structural loading shall be compacted to at least 95% of the maximum dry density. All other areas shall be compacted to at least 90% of maximum dry density.
- 5. All pipe shall be placed on stable earth. If in the opinion of the city inspector, the existing trench foundation is unsatisfactory, then it shall be excavated below grade and backfilled with gravel bedding material to support the pipe.
- 6. Lot drainage systems, stub-outs and any drains behind the sidewalk must be installed as required prior to sidewalk construction. Stub-outs shall be marked with a 2"x4" with 3 feet visible above grade and marked "STORM". Location and depth of these installations shall be shown on the as-built plans submitted to the City.
- 6. All catch basins shall be type 1 unless otherwise shown on the plans and approved by the City. The use and installation of inlets is discouraged.
- 7. All catch basins with a depth of 5 feet (rim to invert) or greater shall be type 2 catch basins equipped with 3/4-inch diameter safety manhole steps or a manhole ladder per City Standard Details.
- 8. All grates shall be marked "outfall to stream dump no pollutants", all solid cover shall be marked "drain", all catch basins and manholes shall be equipped with locking frames and lids or grates per City Standard Details.
- 9. All grates located in the gutter flow line (inlet and catch basin) shall be "flush" with pavement level.
- 10. The Contractor shall be responsible for adjusting all manhole, inlet and catch basin frames and grates/covers to grade just prior to curb installation and/paving.
- 11. All retention/detention facilities shall be installed and in operation prior to, or in conjunction with, all construction activity, unless otherwise approved by the City.
- 12. Detention/retention ponds with side slopes steeper than 3:1 or with a maximum water depth greater than 3 feet shall be enclosed with a vinyl coated chain link fence.
- 12. Bio-filtration swales and/or filter strips shall be constructed, bedded or seeded and in operation prior to, or sodded in conjunction with, asphalt paving. The vegetation in the bio-swale must be well established before paying begins
- 13. Storm water retention/detention facilities, storm drainage pipe and catch basins shall be flushed and cleaned by the Developer prior to the City's acceptance of the project.
- 14. When infiltration facilities are constructed, compaction of soil is not allowed, as the design is based on natural soil in the original location. Vehicles shall not be driven over the infiltration area during construction.
- 15. If the contractor encounters groundwater or soil conditions different from that shown in the plans during infiltration system installation, the contractor shall notify the city inspector.

# **GENERAL NOTES**

- and the current edition of the Washington State Department of Transportation (WSDOT) Standard Specifications for road, bridge, and municipal construction. A copy of these documents shall be on site during construction.
- 2. It is the sole responsibility of the Developer/Contractor to obtain a grading permit, right-of-way permit, and utility permits, from the City. All required permits from other agencies must also be obtained by the Developer/Contractor.

All work and materials shall conform to the current edition of the City of Arlington Public Works Standards and Specifications,

- 3. Prior to any construction activity, the Developer/Contractor shall attend a pre-construction conference with the City. The Constructor shall schedule the pre-construction conference by calling (360) 403-3500. Prior to scheduling, the Contractor must submit and receive approval for the traffic control plan, city permits, temporary erosion and sediment control plan, performance bond, copy of other agency permits, a copy of the contractor's license, and proof of insurance coverage.
- 4. A copy of the approved construction plans must be on the job site when construction is in progress.
- 5. All site work shall be constructed in accordance with the approved plans. Any deviation from the approved plans will require prior approval from the Owner, the City Engineer, and other appropriate public agencies.
- 6. All of the locations of the existing utilities shown in the plans have been established by field survey or obtained from available records and shall therefore be considered approximate and not necessarily complete. It is the sole responsibility of the Contractor to independently verify the accuracy of all utility locations.
- 7. The Contractor shall locate and protect all castings and utilities during construction and shall contact the underground utilities locate service (1-800-424-5555 or 811) at least 48 hours prior to construction.
- 8. Inspection and acceptance of all work will be accomplished by representatives of the City of Arlington. it shall be the Contractor's responsibility to coordinate and schedule appropriate inspections, allowing proper advance notice. The Inspector may require removal and replacement of items that do not meet City Standards or were constructed without inspection.
- 9. The Contractor shall keep the on-site and off-site streets clean at all times by cleaning with a sweeping and/or vacuum truck. Washing of these streets will not be allowed without prior approval from the City Inspector.
- 10. The Contractor shall maintain two (2) sets of "as- built" plans showing all field changes and modifications. Immediately after construction completion, the Contractor shall deliver both copies of red-lined plans to the City. The City will forward one of the copies to the design Engineer.

# EROSION/SEDIMENTATION CONTROL NOTES:

- 1. Approval of the Temporary Erosion/Sediment Control (TESC) plan does not constitute an approval of permanent road or storm drainage design.
- 2. A TESC plan meeting the DOE Storm Water Management Manual adopted by the City shall be submitted to the City for approval prior to any work on the site. An approved copy must be maintained on-site and be readily available to the City Inspector at their request.
- 3. The TESC BMP's shown on the plan must be installed prior to all other clearing and grading activities, and in such a manner as to ensure that sediment-ladden water does not enter the drainage system, leave the site, or violate applicable water quality standards. maintenance, repalcement, and upgrading of the TESC plan is the responsibility of the Contractor until all construction is complete and approved by the City.
- 4. The boundaries of the clearing limits, shown on the TESC plan, shall be clearly fenced or flagged in the field prior to starting construction. No disturbance beyond the fenced or flagged clearing limits shall be permitted. The fencing and/or flagging shall be maintained by the Contractor for the duration of the construction project.
- 5. The TESC facilities shown on the plans are the minimum requirements for the anticipated site construction. During the construction period, these TESC facilities shall be upgraded and added to as needed, for unexpected storm events and to reflect changed conditions, as required by the City.
- 6. The Contractor shall provide the city a 24-hour emergency contact phone number of the Contractor's certified erosion control supervisor prior to starting construction.
- 7. The TESC facilities shall be inspected daily by the Contractor and maintained as necessary to ensure continued function and
- 8. Between October 1 and April 30, disturbed areas that are to be left unworked for more than two (2) days shall be immediately covered by mulch, sod or plastic covering. between may 1 and September 30, disturbed areas that are to be left unworked for more than seven (7) days shall be immediately covered by seeding or other approved methods.
- 9. Sediment deposits shall be removed from all Catch Basins, Pre-treatment/sediment Pond, and sediment Traps upon reaching
- 10. any permanent retention/detention facility used as a temporary settling basin shall be modified with the necessary erosion control measures, shall provide adequate storage capacity, and shall be cleaned out entirely once the site is stabilized. If the permanent facility is to ultimately function as an infiltration system, the facility shall not be used as a temporary settling basin.
- 11. where seeding for temporary erosion control is required, fast germinating grasses shall be applied at an approximate rate of 120 lbs per acre.
- 12. where straw mulch for temporary erosion control is required, it shall be applied at a minimum thickness of 3 inches, or 3,000 pounds per acre.
- 13. Soil stockpiles shall be stabilized within 24 hours. When actively working with the soil stockpile, stabilization BY GROUND COVER BMPS shall occur at the end of each work day.
- 14. Stabilized construction entrances shall be installed at the beginning of construction and maintained for the duration of the project. Additional measures may be required to insure that all paved areas are kept clean for the duration of the project.
- 15. Maintenance and repair of TESC facilities and structures shall be conducted immediately upon recognition of a problem or when the TESC measures become damaged.
- 16. Upon completion of the project, all bmp's shall be removed from the site and right of way. If bmp's are required to remain in place for further protection, arranements for removal shall be made with the city inspector.

# ADA CONSTRUCTION NOTES

The following notes shall apply to hardscape facilities within the public Right-of-Way.

- Unless otherwise specified on the plans, or directed by the City Engineer, cross slopes of sidewalks shall be nominal 1.5%. cross slopes shall not be less than 1% nor exceed 2%.
- 2. Maximum slopes shown on the plans represent the maximum allowable slopes permitted by current ada requirements. The Contractor shall take into consideration construction tolerances when placing sidewalks to insure maximum slopes are not exceeded.
- 3. Completed sidewalks or other hardscape elements that exceed maximum specified slopes or are less than minimum specified slopes shall be removed and replaced by the Contractor at the Contractor's expense.

### **CONTRACTOR NOTE**

It is the responsibility of the contractor and construction manager to ensure that all conflicts between plan sets are identified and resolved prior to commencement of construction activities.

# CONSTRUCTION SEQUENCE

- Arrange and attend a pre-construction meeting with City of Arlington staff, the on-site erosion control specialist, the design engineer, and owner.
- 2. Identify clearing limits as required with flagging and/or temporary orange construction fence.
- 3. Grade and install construction entrance(s).
- 4. Place silt fence, straw bales, etc. as necessary to prevent sediment-laden runoff from leaving site.
- 5. Provide protection for existing offsite catch basins and other drainage facilities.
- 6. Grade swales
- 7. Grade and stabilize roads in conjunction with clearing and grading activity.
- 8. Install temporary sedimentation measures.
- 9. Clear any vegetation on site. Complete mass grading. Save gravel placed over relic topsoil. Reconstruct sediment-trapping measures as grading progresses. Relocate surface water controls and erosion control measures, or install new measures as site conditions change so as to maintain compliance with City of Arlington standards.
- 10. Locate and install Bio-Swale system trenches and associated stormwater conveyance.
- Install Water and Sewer.
- 12. Construct bathroom facilities.
- Final grade, construct and pave roadways. Ensure that the permanent drainage system is complete and functional.
- 14. Remove any temporary sediment controls when permanent drainage is complete and erosion measures are in place and functional. Add topsoil to planting areas. Plant rain gardens and wetland areas in accordance with landscape and wetland mitigation plans.
- 15. Remove remaining temporary erosion control measures when danger of erosion has passed and site is stabilized with final City of Arlington approval.

Y: \_\_\_\_\_\_City Engineer, CITY OF ARLINGTON

CONSTRUCTION DRAWING APPROVAL
THIS PLAN SHEET HAS BEEN REVIEWED AND APPROVED
PER THE CONDITIONS ON THE TITLE SHEET.

THIS APPROVAL VALID FOR 18 MONTHS

CALL AT LEAST 2 BUSINESS DAYS BEFORE YOU DIG 1-800-424-5555 D TECHNO 18820 Third Avenue

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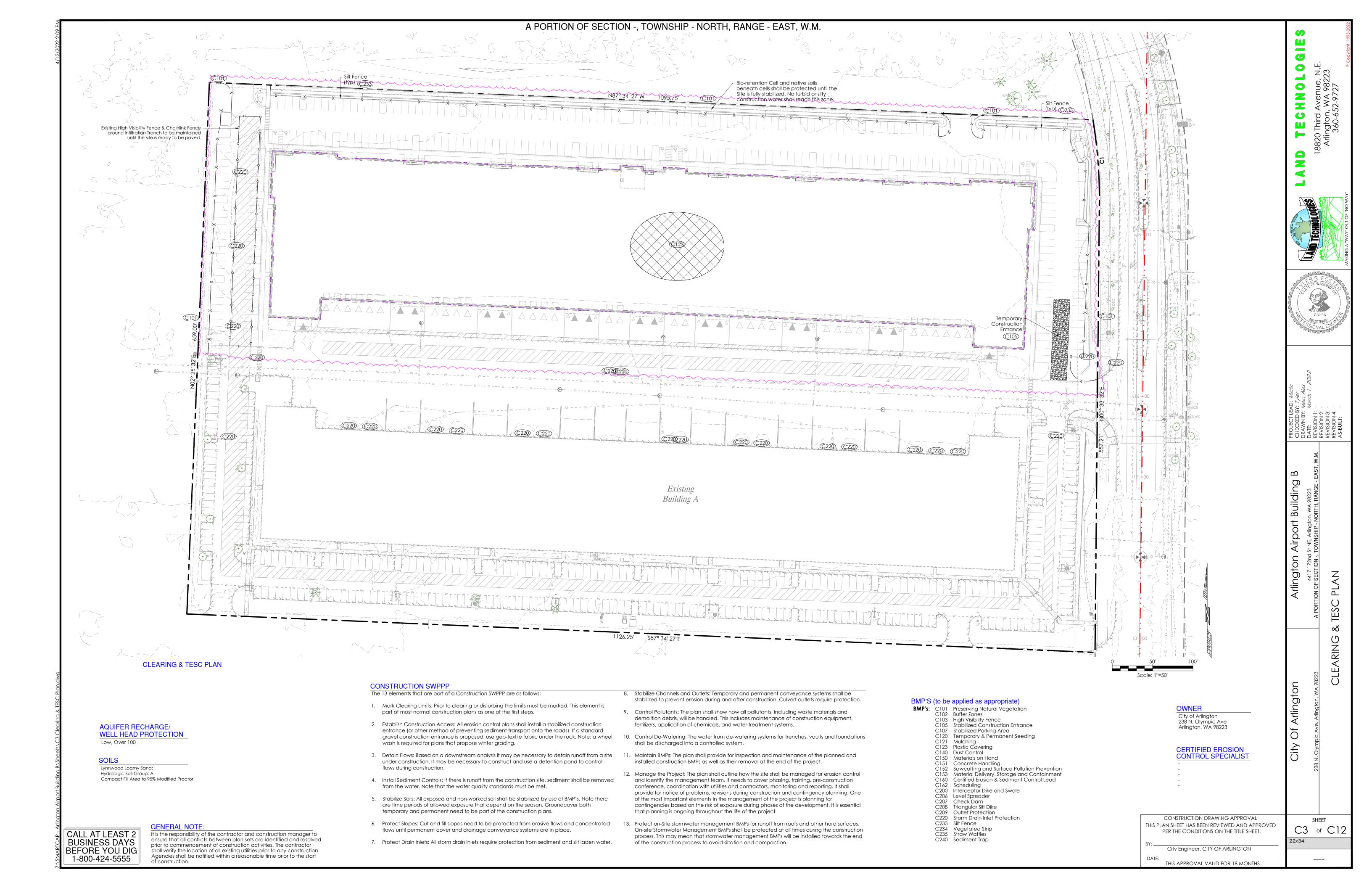
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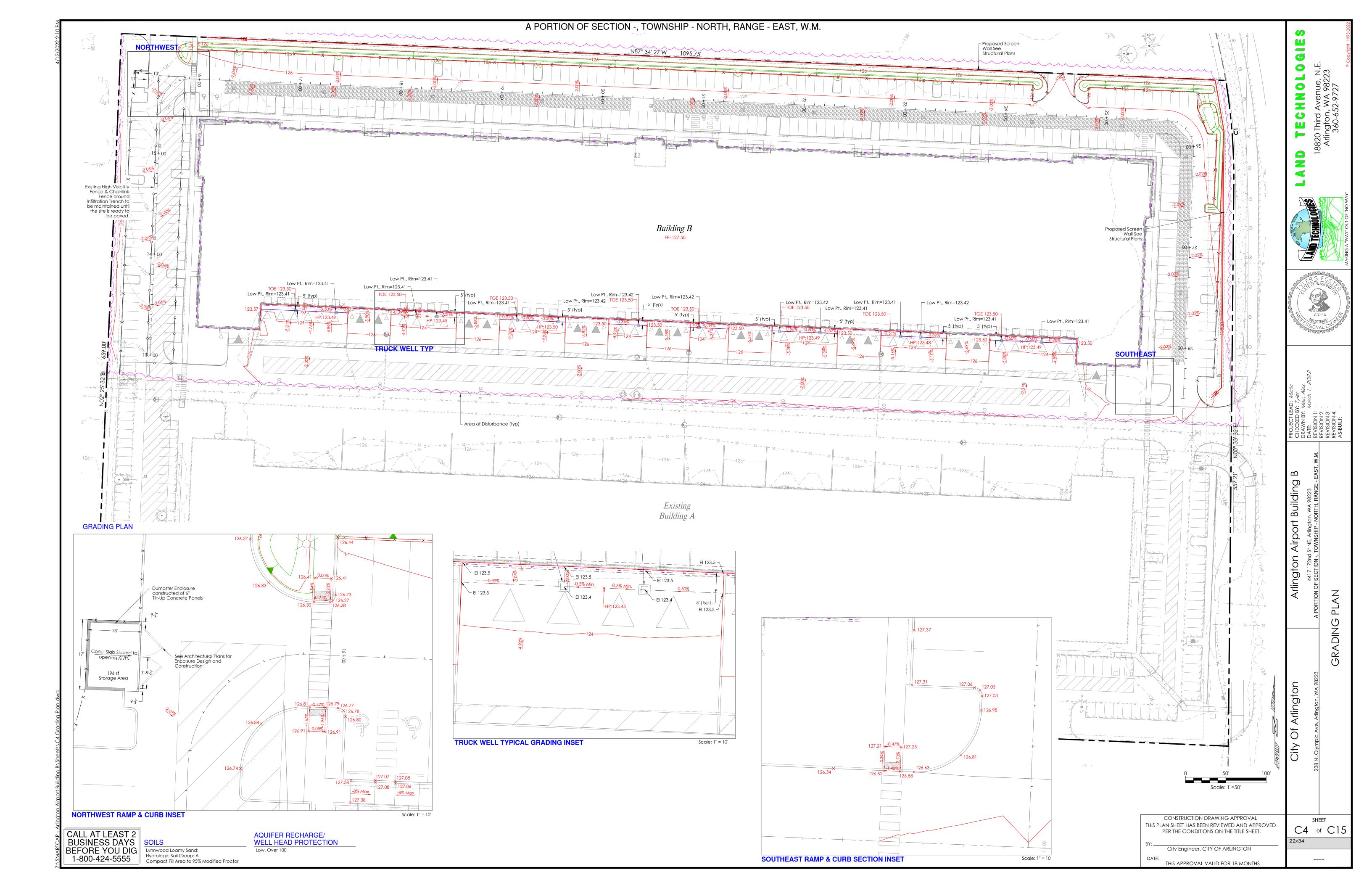
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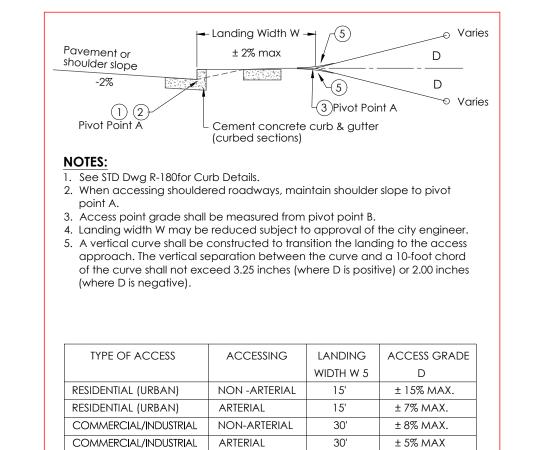
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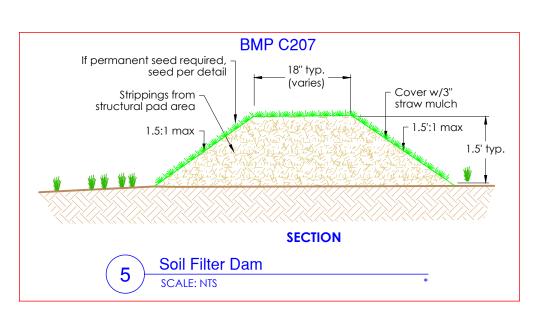
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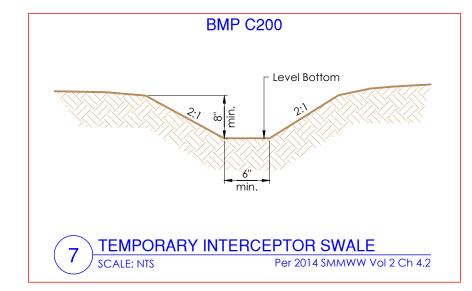


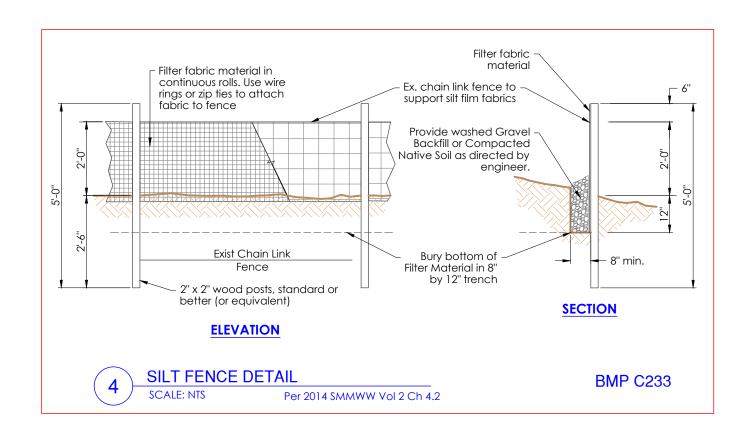


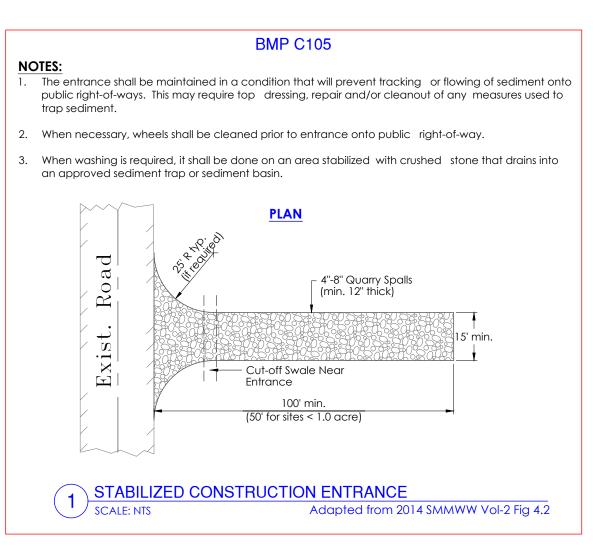


per COA R-090









CONSTRUCTION DRAWING APPROVAL PER THE CONDITIONS ON THE TITLE SHEET. City Engineer, CITY OF ARLINGTON DATE: \_\_\_\_\_\_THIS APPROVAL VALID FOR 18 MONTHS

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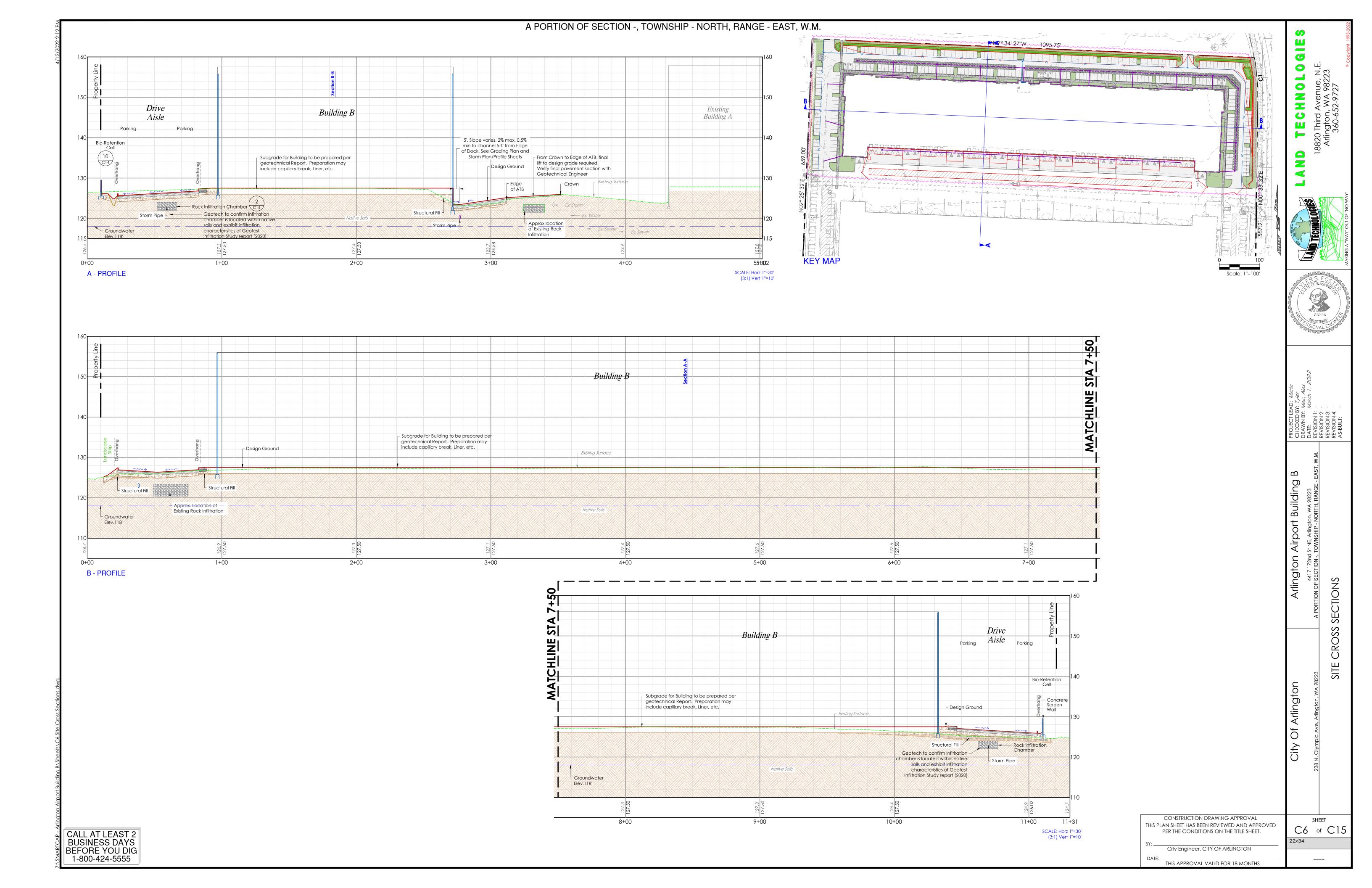


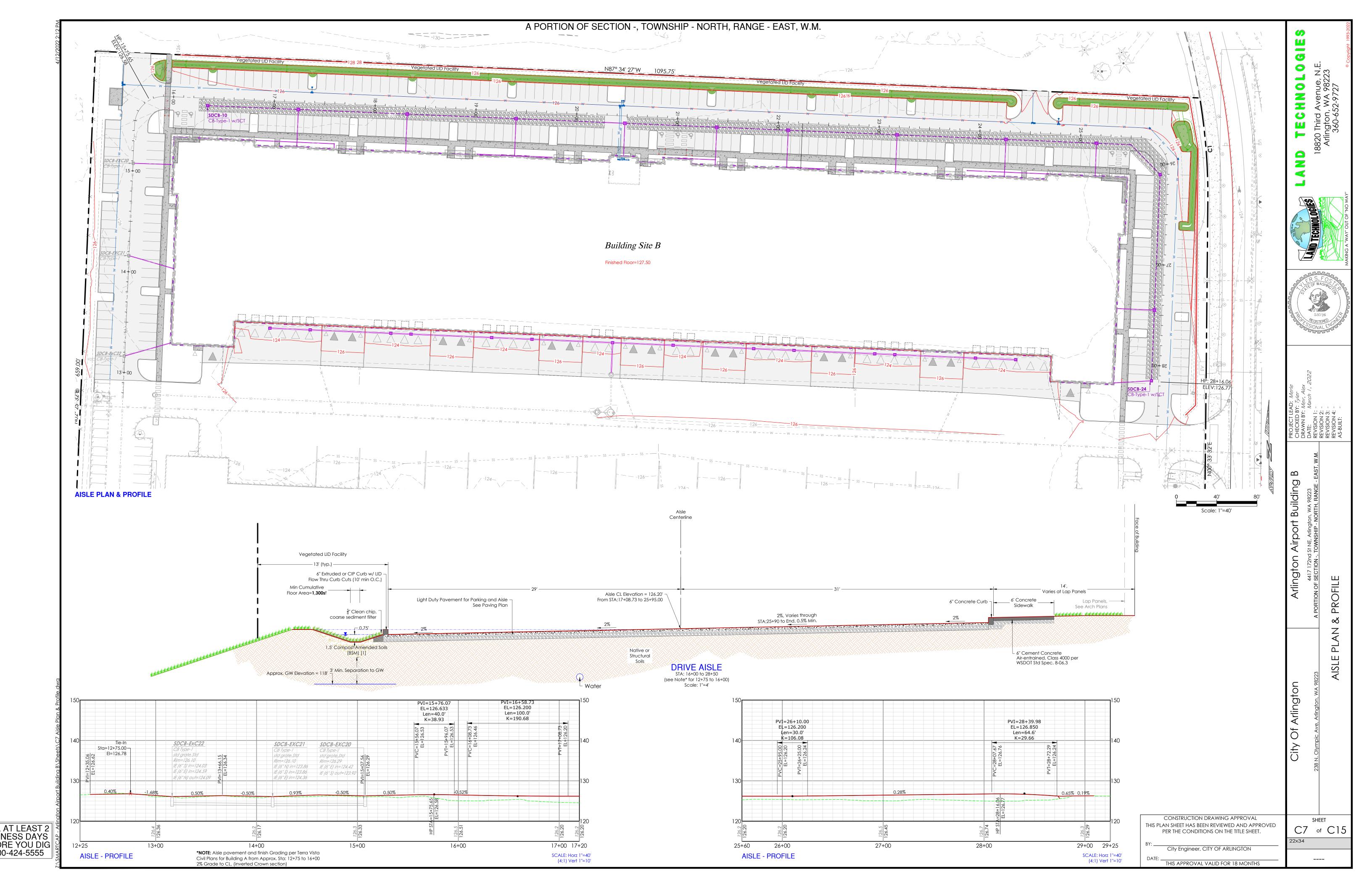
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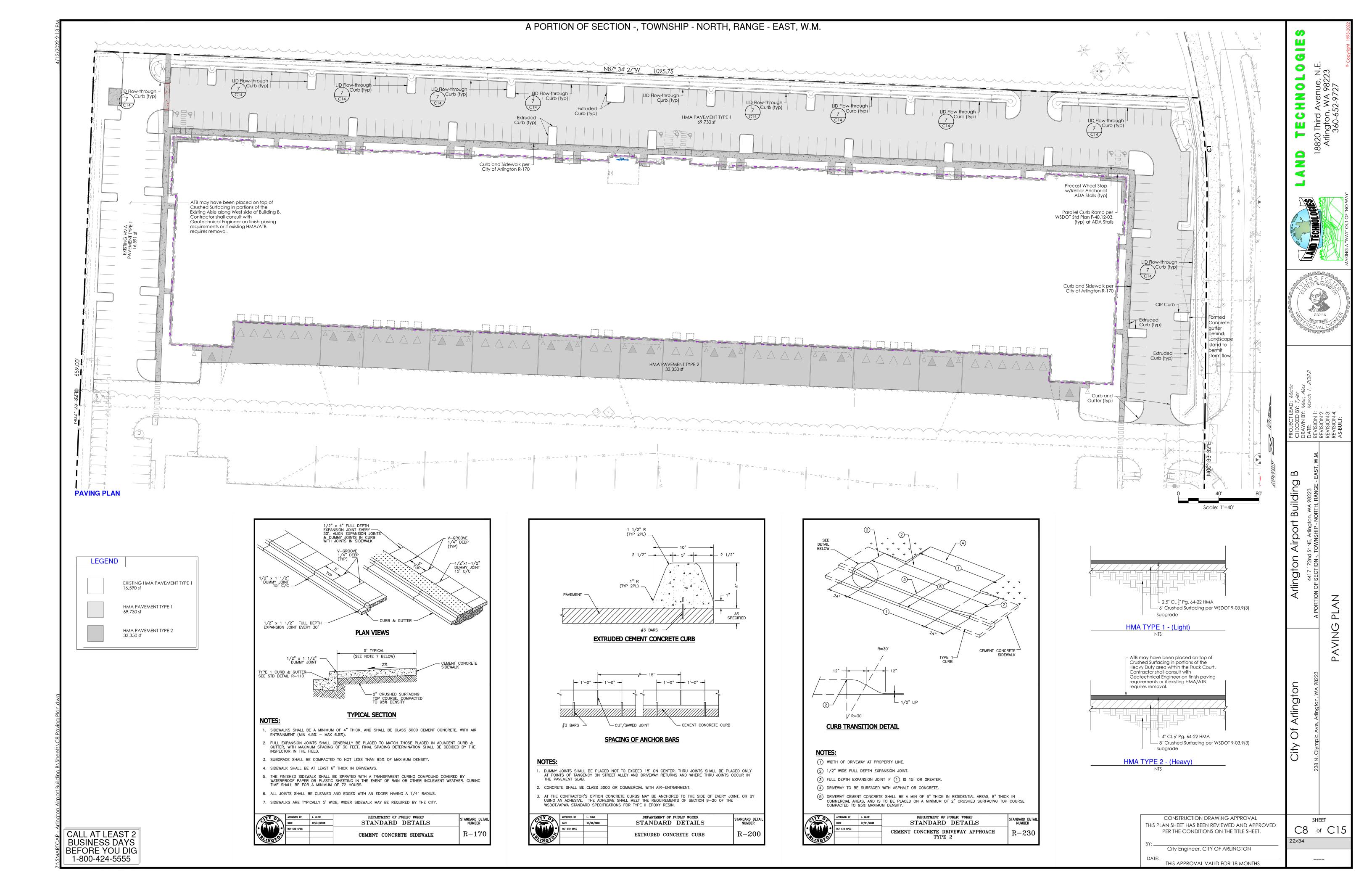
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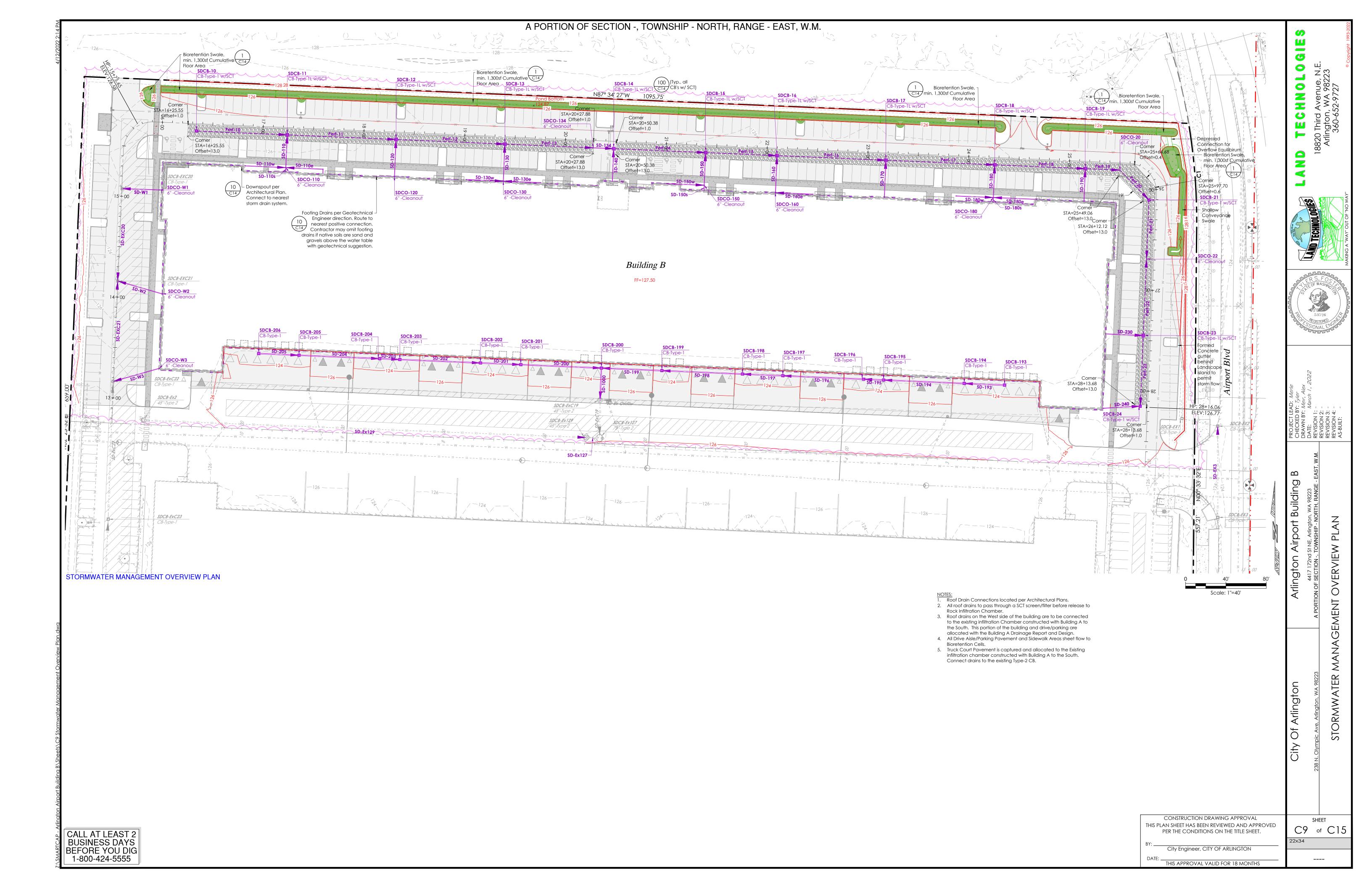
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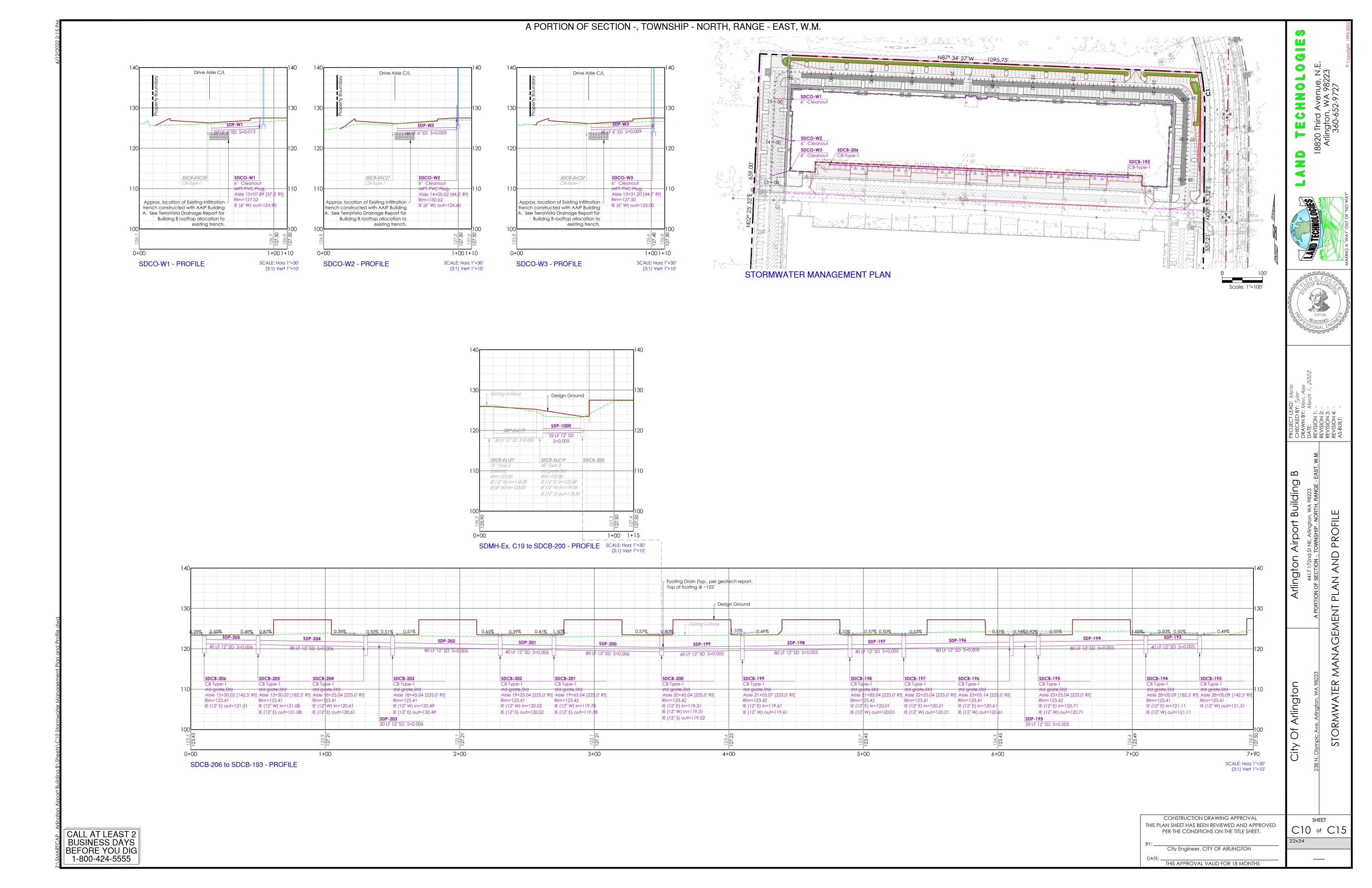
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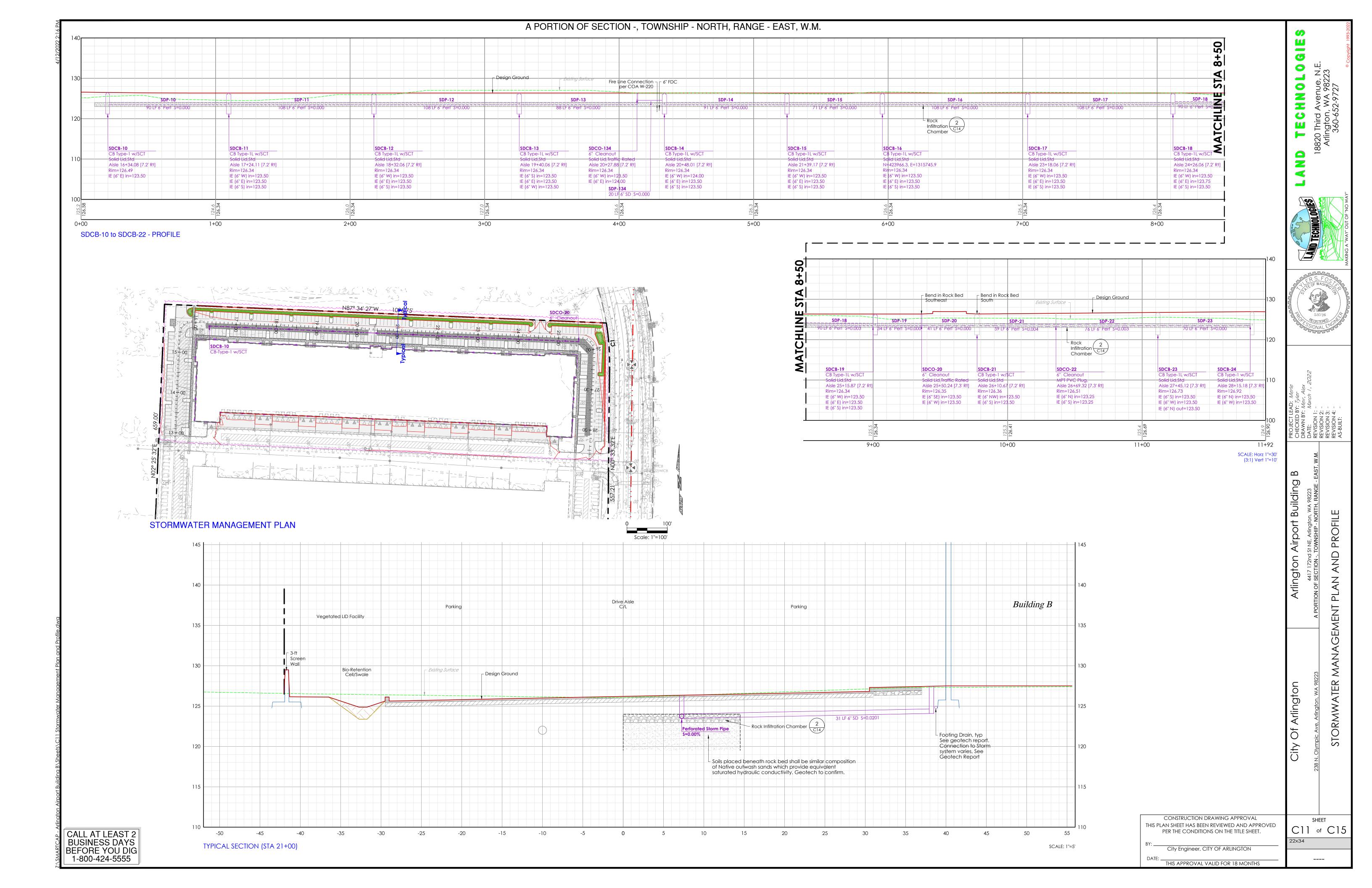


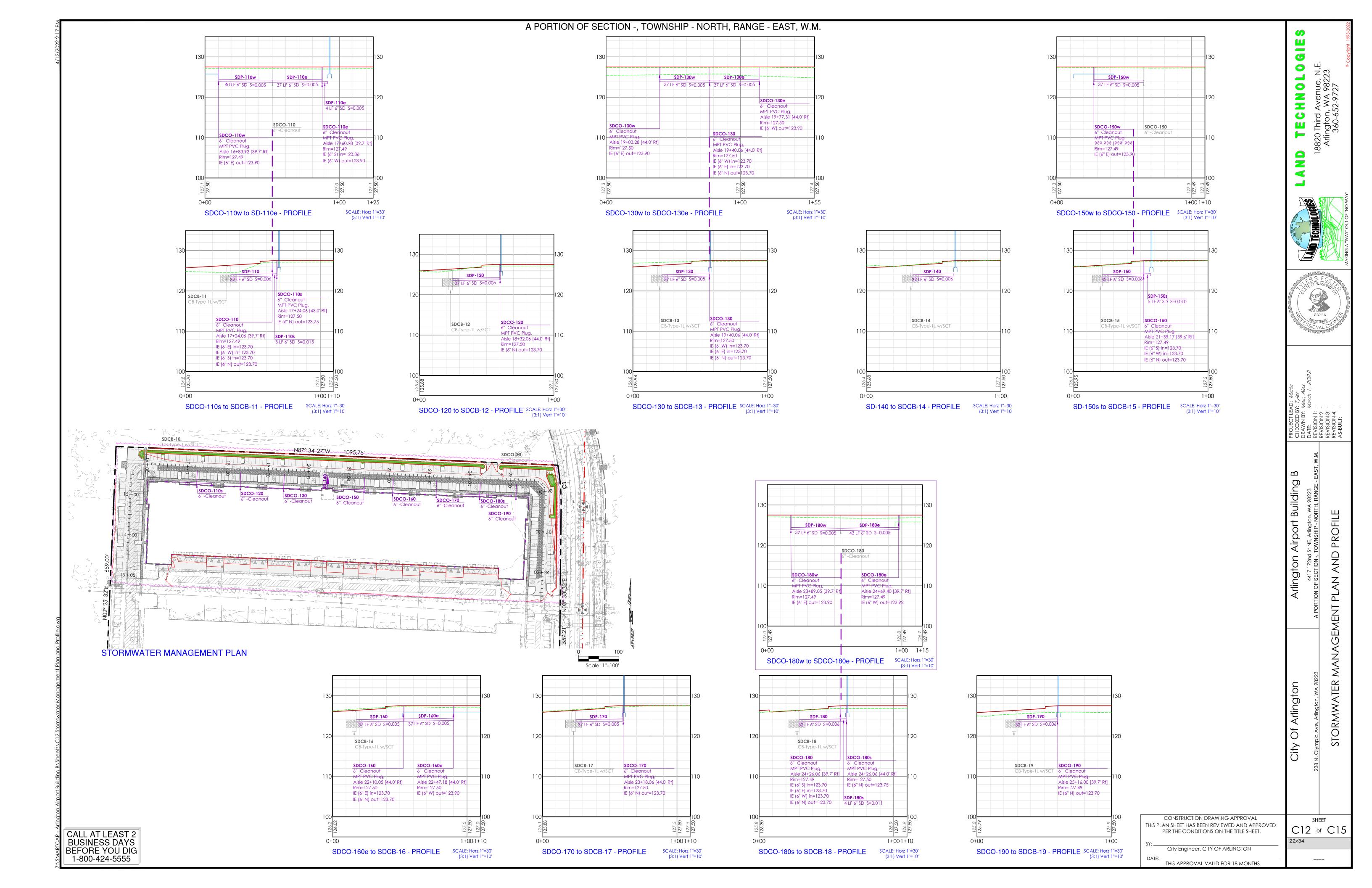


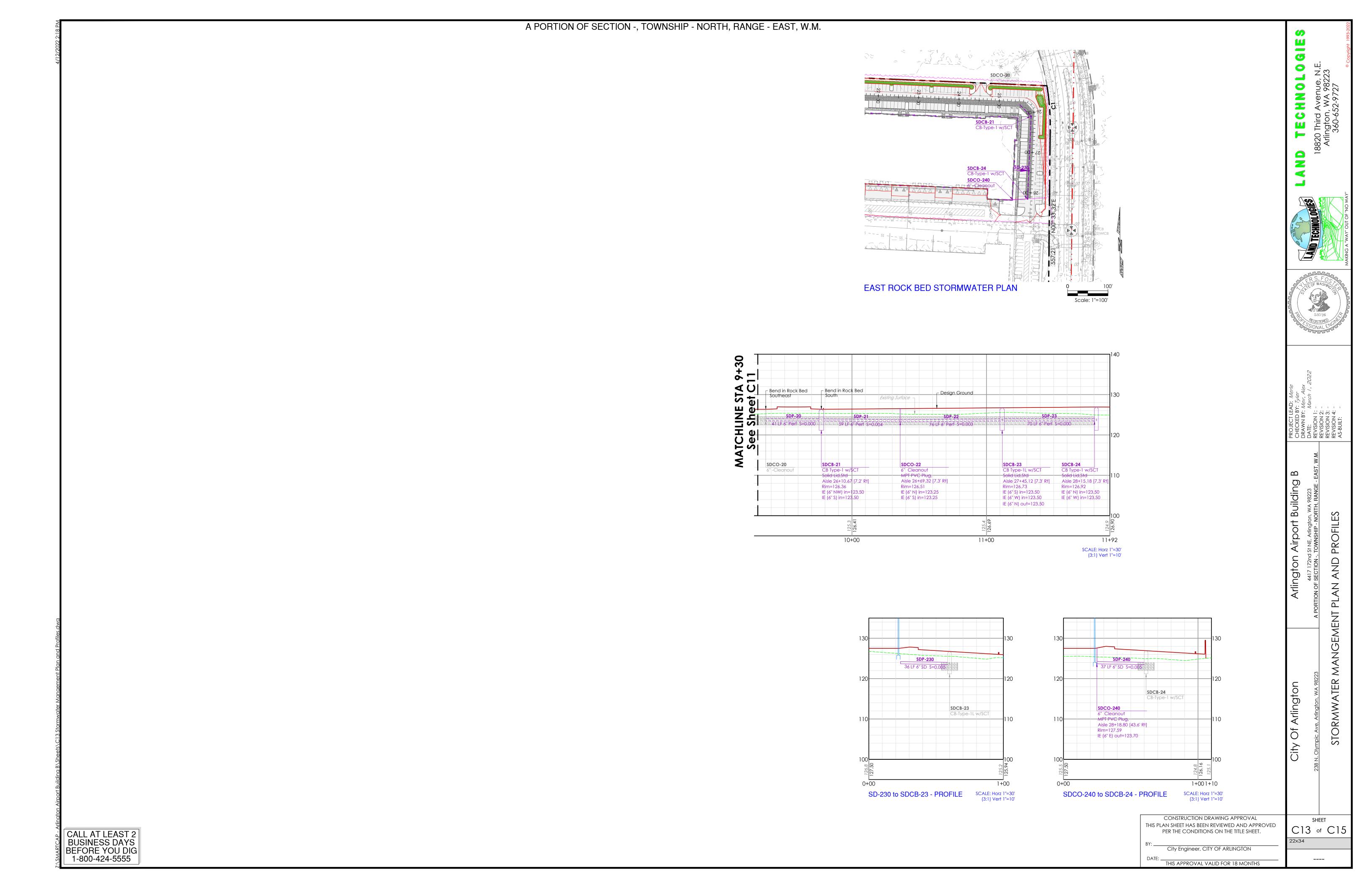












### **Default Bioretention Soil Media**

Projects which use the following requirements for the bioretention soil media do not have to test the media for its saturated hydraulic conductivity

Percent Fines: A range of 2 to 4 percent passing the #200 sieve is ideal and fines should not be above 5 percent for a proper functioning specification according to ASTM D422.

# Aggregate Gradation

The aggregate portion of the BSM should be well-graded. According to ASTM D 2487-98 (Classification of Soils for Engineering Purposes (Unified Soil Classification System)), well-graded sand should have the following gradation coefficients:

- Coefficient of Uniformity (Cu = D60/D10) equal to or greater than 4, and • Coefficient of Curve (Cc = (D30)2/D60 x D10) greater than or equal to 1 and less than or equal to 3.
- The sand gradation below is often supplied as a well-graded utility or screened. With compost this blend provides enough fines for adequate water retention, hydraulic conductivity within recommended range (see below), pollutant removal capability, and plant growth characteristics for meeting design guidelines and objectives. Where existing soils meet the aggregate gradation below, those soils may be amended rather than importing mineral aggregate.

#### General Guideline for Mineral Aggregate Gradation

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Percent Passing	
100	
95-100	
75-90	
25-40	
4-10	
2-5	

#### Compost to Aggregate Ratio, Organic Matter Content, Cation Exchange Capacity

- Compost to aggregate ratio: 60-65 percent mineral
- aggregate, 35 40 percent compost. • Organic matter content: 5 - 8 percent by weight.
- Cation Exchange Capacity (CEC) must be > 5 milliequivalents/100 g dry soil Note: Soil mixes meeting the above specifications do not have to be tested for CEC. They will readily meet the minimum CEC.

# Design Criteria for Custom Bioretention Soil Mixes Projects which

prefer to create a custom Bioretention Soil Mix rather than using the default requirements above must demonstrate compliance with the following criteria using the specified test method:

- CEC ≥ 5 meq/100 grams of dry soil; USEPA 9081
- pH between 5.5 and 7.0
- 5 8 percent organic matter content before and after the saturated hydraulic conductivity test: ASTM D2974(Standard Test Method for Moisture, Ash, and Organic Matter of Peat and Other Organic Soils) 2-5 percent fines passing the 200 sieve; TMECC 04.11-A
- Measured (Initial) saturated hydraulic conductivity of less than 12 inches per hour; ASTM D 2434 (Standard Test Method for Permeability of Granular Soils (Constant Head)) at 85% compaction per ASTM D 1557 (Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort). Also, use Appendix V-B, Recommended Procedures for ASTM D
- 2434 When Measuring Hydraulic Conductivity for Bioretention Soil Mixes. Design (long-term) saturated hydraulic conductivity of more than 1 inch per hour. Note: Design saturated hydraulic conductivity is determined by applying the appropriate infiltration correction factors as explained above under "Determining Bioretention soil mix infiltration rate."
- If compost is used in creating the custom mix, it must meet all of the specifications listed below for compost.

Infiltration rates for the initial placement of Bioretention Soil Media is to be within 6 to 12 inches per hour to ensure vegetation survival.

To ensure that the BSM will support healthy plant growth and root development, contribute to biofiltration of pollutants, and not restrict infiltration when used in the proportions cited herein, the following compost standards are required

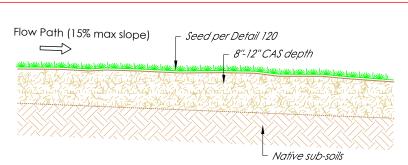
- Meets the definition of "composted materials" in WAC 173-350-220 (including contaminant levels and other standards), available online at
- http://www.ecy.wa.gov/programs/swfa/organics/soil.html
- Produced at a composting facility permitted by the WA Department of Ecology. A current list of permitted facilities is available at http://www.ecy.wa.gov/programs/swfa/compost/
- The compost product must originate a minimum of 65 percent by volume from recycled plant waste as defined in WAC 173-350-100 as "Type I Feedstocks." A maximum of 35 percent by volume of other approved organic waste as defined in WAC 173-350-100 as "Type III", including postconsumer food waste, but not including biosolids, may be substituted for recycled plant waste. Type II and IV feedstocks shall not be used for the compost going into bioretention facilities or rain gardens.
- Stable (low oxygen use and CO2 generation) and mature (capable of supporting plant growth) by tests shown below. This is critical to plant success in a bioretention soil
- Moisture content range: no visible free water or dust produced when handling the material.
- Tested in accordance with the U.S. Composting Council "Testing Methods for the Examination of Compost and Composting" (TMECC), as established in the Composting Council's "Seal of Testing Assurance" (STA) program. Most Washington compost facilities now use these tests.
- Screened to the size gradations for Fine Compost under TMECC test method 02.02-B (gradations are shown in the specification in an appendix of the Low Impact

# Development Technical Guidance Manual for Puget Sound)

- pH between 6.0 and 8.5 (TMECC 04.11-A). If the pH falls outside of the acceptable range, it may be modified with lime to increase the pH or iron sulfate plus sulfur to lower the pH. The lime or iron sulfate must be mixed uniformly into the soil prior to use in the bioretention area.
- Manufactured inert content less that 1% by weight (TMECC 03.08-A)
- Minimum organic matter content of 40% (TMECC 05.07-A) Soluble salt content less than 4.0 mmhos/cm (TMECC 04.10-A)
- Maturity greater than 80% (TMECC 05.05-A "Germination and Vigor")
- Stability of 7 or below (TMECC 05.08-B "Carbon Dioxide Evolution Rate")
- Carbon to nitrogen ratio (TMECC 04.01 "Total Carbon" and 04.02D "Total Kjeldahl Nitrogen") of less than 25:1. The C:N ratio may be up to 35:1 for plantings composed entirely of Puget Sound Lowland native species and up to 40:1 for coarse compost to be used as a surface mulch (not in a soil mix).



Bioretention Soil Media (BSM) SCALE: NTS



Option 1: Leave native soil undisturbed, and protect from compaction during construction.

Option 1 is only applicable to sites that have the original, undisturbed soil native to the site. This will most often be forested land that is being left undisturbed in

# Option 2: Amend disturbed soil according to the following

a. Scarify subsoil to a depth of one foot.

. In planting beds, place three inches of compost and till in to an eight-inch In turf areas, place two inches of compost and till in to an eight-inch depth Apply two to four inches of arborist wood chip, coarse bark mulch, or

compost mulch to planting beds after final planting. (Alternatively, disturbed soil can be amended on a site-customized manner so that it meets the soil quality criteria set forth above, as determined by a licensed engineer, geologist, landscape architect, or other person as approved by Snohomish County).

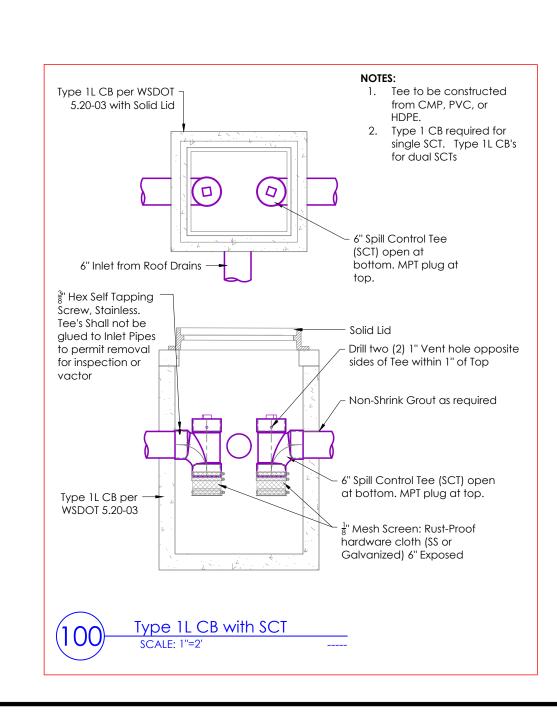
# Option 3: Disturbed Soil.

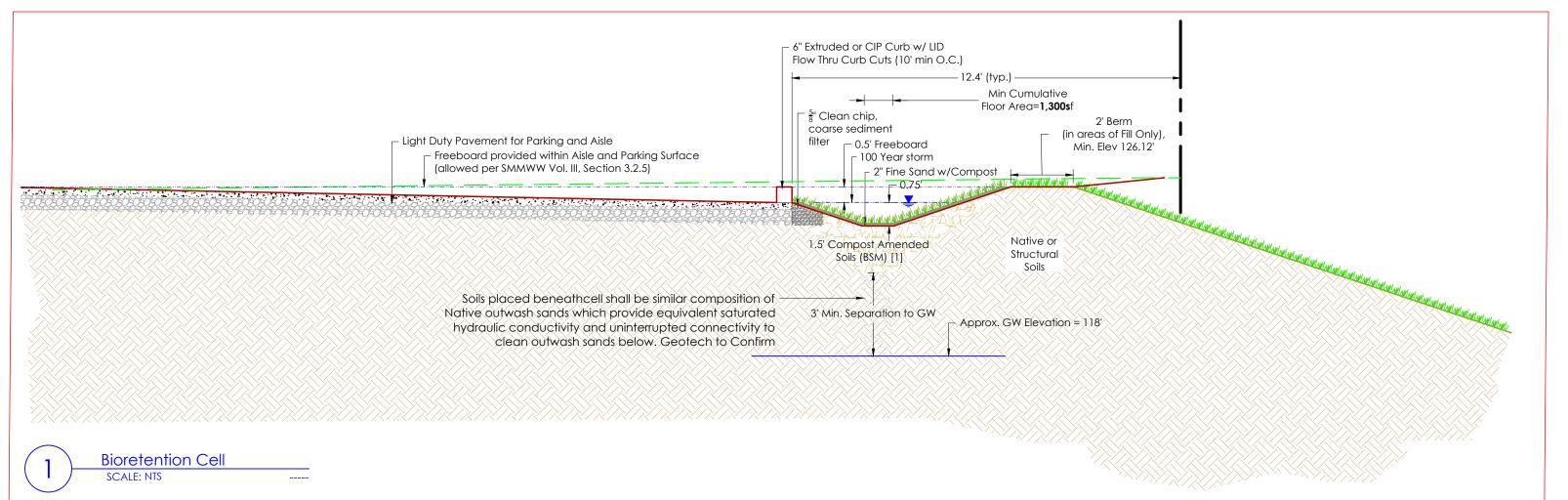
Stockpile existing topsoil during grading and replace it prior to planting. Stockpiled topsoil must be amended if needed to meet the organic matter and depth requirements by following the procedures in option (4). Remove forest duff layer and topsoil and stockpile separately, in an approved location prior to grading. Cover soil and duff piles with woven weed barrier (available from nursery supply stores) that sheds moisture yet allows airflow.

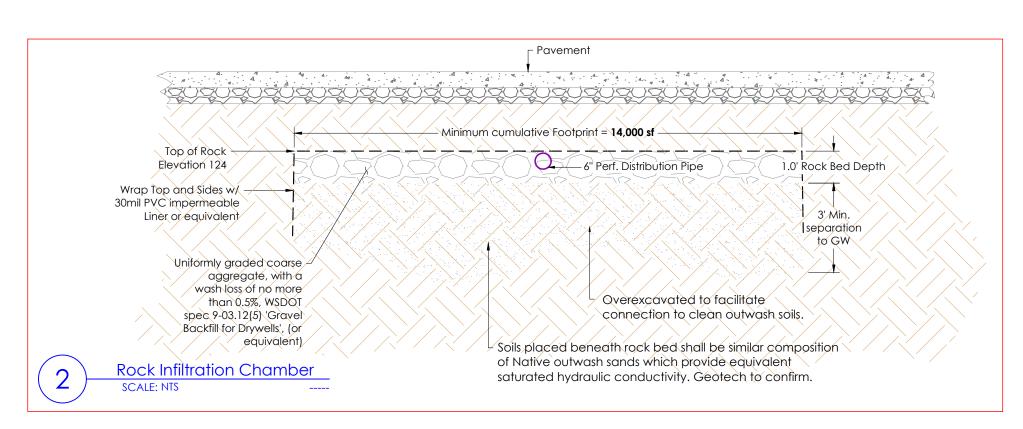
# Option 4: Import topsoil mix with 10% min soil organic matter content.

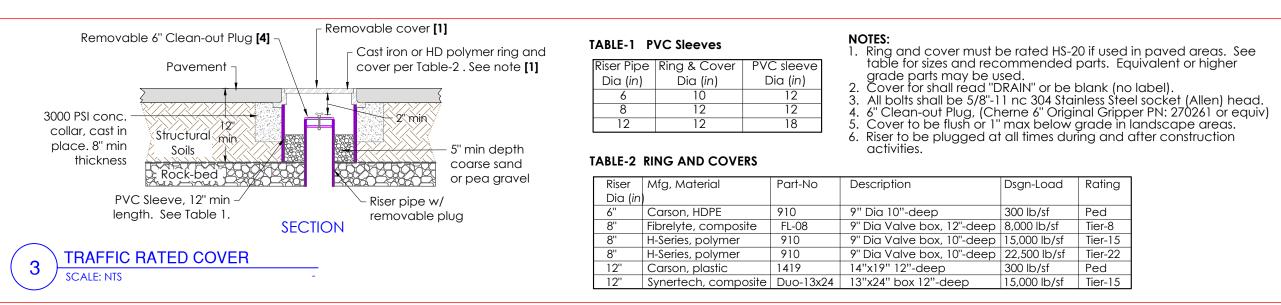
Import topsoil mix of sufficient organic content and depth to meet the organic matter and depth requirements.

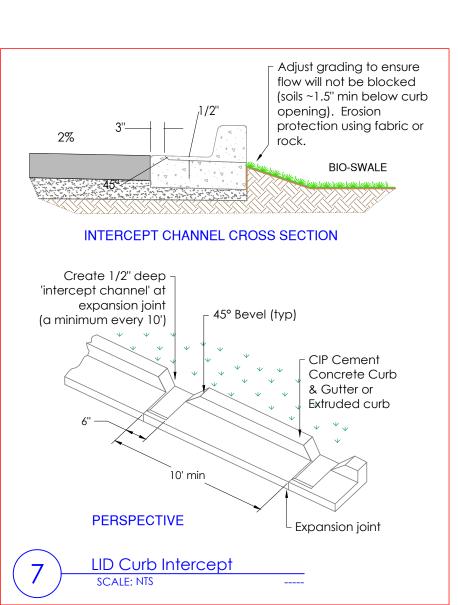


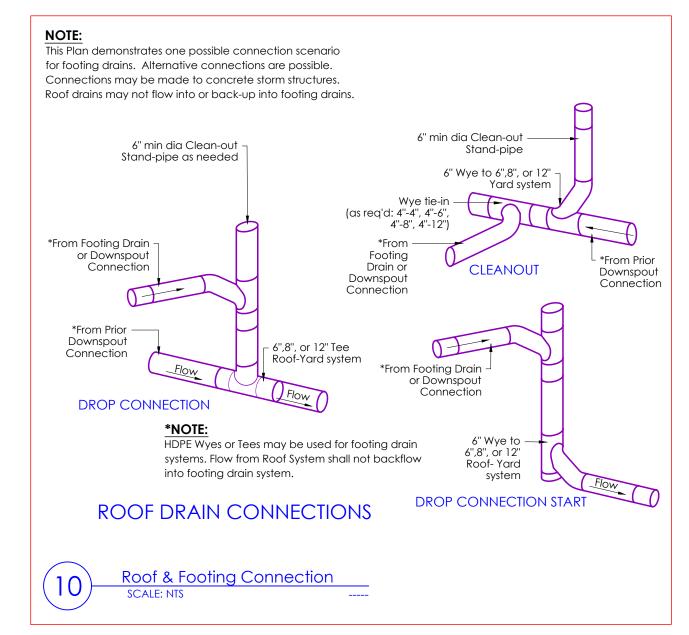


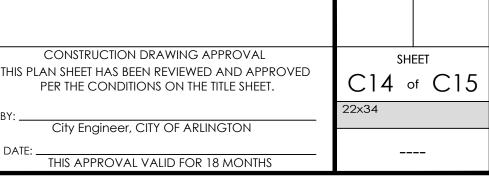












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